To: S. Terry

From: F. VanLandingham

Date: June 24, 1996

Subject: OFLS Support for Transfer Orbit Phase

OFLS learned of several new requirements at the Transfer Orbit TIM held on June 20, 1996. They are based on the presentation "Launch and Ascent Activities Including Transfer Orbit Operations" presented by T. L. State from TRW. This memorandum lists these requirements. Questions based on the presentation are also listed.

Requirements:

MPS

1. Propagate spacecraft momentum from initial value until first scheduled activity unless FOT will operationally dump momentum to known value at start of schedule.
2. Maneuver to Earth scan attitude using MUPS and RWA, standard profiling, and standard command sequence, maneuver to Sun pointing attitude using sun mode, standard profiling, and special Sun mode command sequence.
3. Add ESAs as onboard observing sensors. Select the ESA that provides an optimal Earth observation (maximum Earth width and longest viewing period) and shortest maneuver from to Earth scan position.
4. Add Sun as a target.
5. Add scheduling based on altitude

AD&SC

1. Update Attitude History file with IUS attitude.
2. Provide a standalone capability to propagate attitude based only on gyro data.

Questions:

1. For the gyro calibration, the presentation indicted the 'IUS attitude at separation' and 'OBC attitude quaternion' used as inputs. Why?
2. What is the expected (needed) attitude and gyro bias accuracy as determined from the Earth scan data?
3. The Uplink Burn SCS lists the Burn-Specific - Operational Parameters as

Maneuver Start Time		Burn Start	
Maneuver Max Rate	ICD (rad/sec)	Burn Duration	ICD (sec)
Maneuver Max Acceleration	ICD (rad/sec^2)	Burn Starting Attitude	The ICD lists 1st three elements of Target Quaternion
Maneuver Jerk Time	ICD (sec)	Burn Ending Attitude	

ICD refers to the AXAF-I / OCC ICD Section 6.1.8, June 12, 1996. What is the correct set of parameters?

5. What are the conditions on determining the orbit position (altitude) and duration of the Earth scan?

6. Section 4.7.5.2 of SE11k, 1/11/96, states "at PDA the baseline was to perform the earth viewing maneuver and data collection using battery power. Studies have shown that the maneuvers can be designed so that the solar arrays are kept normal to the sunline, permitting the use of solar power." Is the MPS expected to so 'design' the maneuvers? Can the MPS do this?

7. What other conditions are expected to be imposed or the MPS 'design' of the maneuver? For example, should the spacecraft be pointed so that the ESA IFOV scans across the Earth's equator, thus achieving a maximum duration? The ESA IFOV can scan the Earth anywhere on ~190 degree arc (~170 degree of ESA viewing is blocked by the spacecraft). Should the position be chosen so as to minimize the maneuver?

Is the MPS expected to plan the maneuver from Sun point to the burn attitude or this to be performed by real-time commands based on the results of the TRW burn software? We will distribute this memorandum and use it as a basis for discussion at the MPSWG on Tuesday, June 25. If you have any questions, please feel free to telephone me at 205-837-7200.

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